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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,840	03/03/2005	John G. Speer	34090.0279	1092
25928 7590 07/20/2007 CHRISTOPHER J. KULISH, ESQ. HOLLAND & HART LLP P. O. BOX 8749 DENVER, CO 80201-8749			EXAMINER YANG, JIE	
			ART UNIT 1709	PAPER NUMBER
			MAIL DATE 07/20/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/526,840

Applicant(s)

SPEER ET AL.

Examiner

Jie Yang

Art Unit

1709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 03/03/2005
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

### DETAILED ACTION

Claims 1-8 are pending in application. Provisional application No. 60/319,521, filed on Sept. 4, 2002.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, are rejected under 35 U.S.C. 102(b) as anticipated by Koyama et al (U.S 6,319,338, thereafter '338).

Regard to claim 1, '338 discloses a high-strength hot rolled and high strength cold rolled steel sheet during dynamic deformation.... (Col.1, Line 7-13).

Regard to "providing a steel alloy"; and "...annealing said steel alloy at an annealing temperature to produce austenite in said steel alloy." '338 teaches the cold-rolled steel sheets are subjected to annealing. The annealing temperature is from  $0.1 \times (A_{c3} - A_{c1}) + A_{c1}^{\circ}\text{C}$  to  $A_{c3} + 50^{\circ}\text{C}$ , and the choice of annealing temperature and time ensure a uniform temperature and an appropriate amount of austenite for the steel sheets (Col.13, line 50 to Col.14, Line 15). As  $A_{c3}$  is austenite transforming

Art Unit: 1709

temperature, keep steel at a temperature higher than  $A_{c3}$ , single phase, austenite, will be formed.

Regard to "quenching, ... at least a portion of said austenite into martensite" recited in instant claim, '338 teaches rapid cooling at cooling rate from  $10^{\circ}\text{C}/\text{sec}$  to  $200^{\circ}\text{C}/\text{sec}$  reaches to  $150^{\circ}\text{C}$  to  $450^{\circ}\text{C}$ , a portion of said austenite into martensite (Col. 14, Line 33-44), for example, most test steel samples (#16-40 in table 6 and 7 of '338), quenching temperature is from  $200\text{-}350^{\circ}\text{C}$  and martensite is from 1.3% to 4.2%.

Regard to "carbon partitioning step" recited in instant claim, '338 teaches: "... to obtain the necessary amount of retained austenite; the holding time range was from 15sec to 20 min. The holding at  $150^{\circ}\text{C}$  to  $500^{\circ}\text{C}$ ..." (Col.14, Line 45 to Col.15, Line 12; Claim 9 of '338); '338 also points out at such temperature, a portion thereof is preferably transformed to bainite to further increase the carbon concentration in the austenite; and for more than 20min. precipitation of iron carbides or pearlite transformation will result after bainite transformation... (Col.14, Line 45 to Col.15, Line 12). Compared experimental samples of '338 (Table 5-8) with test sample recited in instant invention (Fig. 3, and Page 8, Line 3-9), similar annealing temperature ( $780\text{-}800^{\circ}\text{C}$  for #16-40 of '338), similar quenching temperature ( $200\text{-}400^{\circ}\text{C}$  for #16-40 of '338), and

Art Unit: 1709

similar partitioning temperature (300-400 °C for #16-40 of '338) will inherently lead to similar microstructure (MPEP 2112 IV). Actually '338 shows carbon concentration of retained austenite after heat treatment changed from original carbon composition 0.02-0.35 (table 5 of '338) to 1.03-1.42% wt. (Table 8 of '338).

Regard to "cooling step", '338 teaches in claim 9: "cooling the strip to room temperature." General heating treatment steps can also refer to Fig.7 of '338. Regard to above discussions, the limitation recited in instant claim is anticipated by '338.

Regard to claim 2, which depended on claim 1. '338 teaches the steel comprising 0.03 to 0.3 mass% of C. And this range covers the C wt.% range of sample (0.19C - Page 8, Line 3 of instant application) recited in instant invention. It is a low carbon steel alloy.

Regard to claim 3, which depended on claim 1. As discussed in rejection for the claim 1, '338 teaches the annealing temperature is from  $0.1 \times (A_{c3} - A_{c1}) + A_{c1}$  °C to  $A_{c3} + 50$  °C. Austenite phase will be formed. Claim 3 is anticipated by '338.

Regard to claim 4, which depended on claim 1. '338 teaches: "...followed by cooling to a primary cooling stop temperature  $T_q$  in the range of 550-720 °C (between  $A_{c3}$  to  $A_{c1}$ )" (col.13, Line 50-66); Refer to rejection for the claim 1,  $A_{c3}$  is a fully austenite

Art Unit: 1709

temperature, the limitation recited in instant claim is anticipated by '338.

Regard to claims 5, and 6, which depended on claim 1. As discussed in rejection for the claim 1, '338 teaches cooling the heated steel at cooling rate from 10°C/sec to 200 °C/sec reaches to 150°C to 450 °C. At lower than 150 °C, virtually all of the remaining austenite remaining untransformed is transformed to martensite. Between 150°C to 450 °C, partial of martensite are formed. This means the temperature chosen above lower than temperature of martensite forming, for example, most test steel samples (#16-40 in table 6 and 7 of '338), quenching temperature is from 200-350 °C and martensite is form 1.3% to 4.2%. Claims 5 and 6 are anticipated by '338.

Regard to claims 7, and 8, which depended on claim 1. As discussed in rejection for the claim 1, '338 points out at such temperature (150-500 °C), for more than 20min. precipitation of iron carbides or pearlite transformation will result after bainite transformation... (Col.14, Line 45 to Col.15, Line 12). '338 shows carbon concentration of retained austenite after heat treatment changed to 1.03-1.42% wt. (Table 8 of '338; and original carbon composition is 0.02-0.35 refer to table 5). Carbon mobility is necessary for the precipitation of carbides. Claims 7 and 8 are anticipated by '338.

Art Unit: 1709

**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure US 5,618,355, which is interest for similar heat treatment process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-270-1884.

The examiner can normally be reached on M-F, 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY



  
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SUPERVISORY PATENT EXAMINER